

X-333 Uranium Enrichment Process Building

Description: X-333 is a two story steel frame building constructed in 1955. The power, utilities and controls are on the first floor and the 640 “000” size cell stages are on the second floor.



- Cat 2 Nuclear building
- There are 65 – acres of floor space
- Large quantities of Asbestos Containing Material are present, including exterior siding, cell housing siding and pipe insulation
- Flat composite gravel-coated asphalt roof
- Cells have been treated to less than Always Safe Mass
- Fire protection is being converted to a dry pipe system
- Railroad spurs are located on East and West sides
- Area heat is provided by electricity. Steam heat is still utilized for various systems.
- Power is provided from the X-533 switchyard but soon will be from the X-530 switchyard.
- 2nd floor and about 30% of the 1st floor are contamination control zones

- Lead – Acid Batteries
- Aluminum Oxide, Sulfuric Acid, Nitric Acid
- Fuels: Gasoline, Diesel, and Kerosene
- Anti- freeze
- Concrete floors have PCB contamination due to leaks from transformers and HVAC duct gaskets and chromium contamination from recirculating cooling water leaks.
- Large quantities of fluorescent light tubes and HVAC control switches containing mercury are present
- PCBs are present in over 80 transformers and more than 6000 static capacitors.
- 125,000 gal of PCB transformer oil
- 59,000 gal of process lube oil in 16 tanks on 1st floor
- Residual R-114 (52,000 lbs) in cell cooling system, cold recovery system and air conditioners
- Classified materials include Converters, Compressors and Compressor seals
- There are 11 high bay cranes used to lift the process equipment (e.g., converters which are the largest weighing 33 tons) the cranes are in place, the Department makes no claims to certification status or operability
- A small amount of transuranics is present
- The building has presence of Tc-99

X-533A High Voltage Switchyard, X-533 Switch House, X-533C Test and Repair Shop, X-533D Oil House, X-533E & F Valve House, X-533 Gas Reclaiming Cart Garage, and X-533T-1 Trailer; collectively the X-533 Switchyard

Description: The X-533 Switchyard receives power from the grid at 345 kv and steps it down to 13.8 kv for distribution to the X-333 Process Building and area auxiliaries.

The X-533A is a fenced, graveled, 770,000 SF yard housing 16 transformers and 18 associated gas-filled circuit breakers for controlling power. A sulfur hexafluoride (SF₆) gas cart and equipment for filling the gas circuit breakers is stored in the yard.

The X-533B is the 150,000 SF two-story control room flanked by 2 switch houses constructed of concrete and steel with transite siding. They house synchronous condensers, auxiliary transformers, air blast circuit breakers, air compressors to operate breakers, HVAC equipment, power cables, and controls.

The X-533C is a 1200 SF steel-framed electrical maintenance shop with transite siding.

The X-533D is a 500 SF steel-framed transformer oil storage and transfer facility.

The X-533E & F are below ground pump houses for the deluge fire water system protecting the high voltage transformers. They are on the east and west sides of the X-533A, respectively. They house 8 and 7 water pumps.

The X-533H is a 1200 SF metal garage for SF₆ storage and gas reclaiming cart Garage.

The X-533T1 is a 12ft x 60ft office / breakroom trailer.



- Extremely low levels of PCBs are present in select transformers
- Electrical cables are lead-covered
- Lead-based paint
- Battery acid
- Mineral oils potentially contaminated with PCBs
- Asbestos is present on pipe insulation and transite exterior siding
- Mercury in switches and fluorescent light tubes
- Freon in HVAC chillers
- SF₆ gas
- PCBs are present in HVAC duct gaskets and light ballast
- PCBs are present in soils from previous transformer leaks
- VOCs in the soil from historic cleaning with carbon tetrachloride and TCA
- Contamination control zones around ventilation ducts on the ground floor of both switch houses
- Lead – Acid Batteries
- Compressed Gas Cylinders
- Halon fire protection system

X-630-1 Recirculating Water Pump House, X-630-2A Cooling Tower, X-630-2B Cooling Tower, and X-630-3 Acid Handling Station

Description: The X-630-1 is a 10,200 SF reinforced concrete building with transite siding. It houses vertical water pumps to circulate RCW from X-630-1 to the X-330 Process Building and return to the two towers.

The X-630-2A and X-630-2B are each a 10 cell wood cooling tower over a basin that extends under the pump house. The 22-ft diameter fans are driven with electric motors, but are not in service.



- Towers have Asbestos Containing Material in siding and pipe insulation
- PCBs in five pole-mounted transformers and fluorescent light fixture ballast
- Sulfuric acid storage tank at X-630-1
- Lead base paint
- Chromium in the wood and soils from historic use of chromate water until 1991
- Mercury in fluorescent light tubes
- Lead – Acid Batteries
- Corrosion/deposition prevention chemicals stored in above ground tanks

X-633-1 Recirculating Cooling Water Pump House, X-633-2A Cooling Tower, X-633-2B Cooling Tower, X-633-2C Cooling Tower and X-633-2D Cooling Tower

Description: The X-633-1 is an 11,000 SF reinforced concrete building with transite siding. It houses vertical pumps to circulate RCW from the cooling towers to the X-333 Process Building and return to the towers. There is a row of mineral oil transformers along the northeast outside wall.

The X-633-2A, B, C, & D are wood-framed, transite-siding cooling towers over concrete basins that connect with the basin under the X-633-1. The A and B towers are original, have 20 cells with 20 ft diameter fans and cover 24,000 SF each. The C & D towers were added in the 1970s, have 8 to 10 cells each with 24-ft diameter fans and cover 15,000 and 18,000 sf. The fill in the cells was replaced in the 1990s with a special high surface area material. The first high performance fill material was rubber-coated corrugated asbestos.



- The cooling towers have visible structural damage
- Towers have Asbestos Containing Material in siding and pipe insulation
- PCBs In transformers and fluorescent light fixture ballast
- Sulfuric acid and corrosion/deposition prevention chemicals stored in above ground storage tanks

- Lead base paint
- Chromium in the wood and soils from historic chromate water treatment
- Septic tank and leach bed
- Mercury in fluorescent light tubes
- Lead –Acid Batteries

X-747 Storage Yard

Description: X-747 storage yard includes nine designated uncovered storage areas. The X-747 is a clean scrap yard used for storage of used, surplus equipment, and scrap.



- Soils are assumed to be contaminated with oils, fuels, and unspecified chemicals
- Freon may be present in surplus refrigeration and air conditioners
- Lead-based paints are assumed to be on much surplus equipment
- Asbestos Containing Material may be present inside scrap instrument cabinets and/or pipe manifolds
- Much of the surplus equipment is unlabeled

X-760 Chemical Treatment Facility

Description: X-760 is an 8,000 SF two-story masonry building with north and south high bays housing chemical equipment. Restrooms, lockers, offices, and electrical equipment room are on the east side.

A neutralization pit is located on the north side. Currently, the facility is used for storage of equipment from pilot plant experiments. Historically, it was used to conduct studies of methods to recover uranium from solutions, to study UF_6 releases in an environmental chamber (North High Bay), to treat PCBs with sodium, and to conduct a wide variety of mechanical as well as chemical experiments.



- Condition of outside side stair and ladder conditions unknown
- Areas of the high bays are posted Contamination Control Zones
- A californium source for waste measurement “shuffler” was stored in the north storage room that may still be present
- Residues of many previously used chemicals are present
- Concrete floors are contaminated from a Variety of chemicals including but not limited to sodium, uranium, PCBs solvents, acetone, ethanol, paints, lacquers, sodium fluoride, contaminated oil, epoxies, PVC pipe cleaner and glue, chromium, and VOCs
- Mercury in fluorescent light tubes
- PCBs in fluorescent light fixture ballast
- Refrigerant in air conditioners
- Compressed gas cylinders